The TS5111 DDR5 temperature sensor with accuracy up to ±0.5°C is a precision temperature sensor targeted at DDR5 DIMM modules, as well as a host of other applications such as solid-state disks (SSDs), computing motherboards, and communications equipment that require accurate, real-time precise temperature information.

The temperature sensor is powered by a single 1.8V nominal power supply, and is intended to operate up to 12.5MHz on a 1.0V to 1.2V I3C Basic IO bus or up to 1MHz on a 1.0V to 3.3V I2C IO bus. The TS5111 supports other advanced features like in-band interrupts, parity check, and packet error checks.

The TS5111 comes with several user-programmable registers to provide maximum flexibility for temperature-sensing applications. The registers allow specifying critical, upper, and lower temperature limits. Both the limits are used for communicating temperature events from the chip to the system. This communication is done using IBI (In-Band Interrupts).

The temperature sensor is available in a small 0.8 × 1.3 mm form factor, 6-WLCSP package.

**Features**
- Two-wire programmable I²C or I3C bus serial interface
- Up to 12.5MHz transfer rate
- Single 1.8V power supply input; Optionally can take 1.0V input power supply on the VIO pin
- Supports 1.0V, 1.1V, and 1.2V push-pull IO levels
- Supports 1.0V, 1.1V, 1.2V, 1.8V, 2.5V, and 3.3V open-drain IO levels
- Integrated temperature sensor; 0.5°C accuracy with 0.25°C resolution
- Packet Error Check (PEC) function
- Parity error check function
- Bus reset function
- Up to two unique addressing selected by SA pin
- Programmable I²C or I3C bus addressing scheme
- In-Band Interrupt (IBI) (transparent mode of operation)
- 6-WLCSP package device functional diagram

**Applications**
- DDR5 memory modules
- Servers, laptops, PCs
- SSD and other PC peripherals
- Mobile devices and industrial temperature monitors

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Thermal Sensor</th>
<th>Temp. Range</th>
<th>I²C or I3C Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS5111</td>
<td>Yes</td>
<td>-40° to 125°C</td>
<td>0x10 HID</td>
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</tbody>
</table>

**Block Diagram**

![Block Diagram](image-url)
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